

Federal  
Railroad  
Administration

TRACK DIVISION  
Association of State Rail  
Safety Managers

NAME  
Ken Rusk

September 10, 2014

- **Track Safety Standards (Part 213)**
  - Provide guidance to regional staff and railroads in interpretation, application and enforcement.
- **Railroad Workplace Safety (Part 214)**
  - Roadway Worker Protection and Roadway Maintenance Machine programs. Provide guidance to regional staff and railroads in interpretation, application and enforcement.
- **Automated Track Inspection Program (ATIP)**
  - Develop schedules, provides technical support & oversight. Disseminate ATIP Critical track exceptions to Railroads & Regions.

- **Positions (5)**

- Staff Director Ken Rusk (202) 493-6236
- Arthur Clouse Track Safety Specialist (202) 493-6252
- James Payne Track Safety Specialist (202) 493-6005
- Joe E. Riley Track Safety Specialist (202) 493-6357
- Yu-Jiang Zhang Civil Engineer (202) 493-6460

- **Vacancies**

- One Civil Engineer









- **Areas of Responsibilities**

- Part 213 Track Safety Standards

- Low Speed - Arthur Clouse
- High Speed – Yu-Jiang Zhang

- Part 214 Railroad Workplace Safety

- RWP, RMM, General – Joe Riley

- ATIP

- Operations/Scheduling – James Payne
- Data Management – Yu-Jiang Zhang
- Application – Arthur Clouse

- Other (Supportive Rules)

- RSAC safety regulatory initiatives, HSR program, RPD

- **RWP Adjacent Track**

- Final Rule, November 30, 2011 (Received Petitions to Reconsider) Comments received
- Final Rule, January 10, 2014
  - Effective date July 1, 2014

- **RWP General Rule**

- NPRM published August 20, 2012, Comments received

- **Vehicle/Track Interaction Safety Standards**

- High Speed and High Cant Deficiency Operations
- Final Rule published March 13, 2013
- Effective date July 11, 2013



**High Speed Research Car  
DOTX216 (T-16)**

**Only 125 mph operation  
(NEC)**



**Track Inspection Car (ATIP)  
DOTX217 (T-17)**

**Track Geometry, Ride  
Quality, Rail Cant,  
Self propelled capability**



**Gage Restraint Inspection Car  
DOTX218 (T-18)**

**Only Car with GRMS, Testing speed  
limited to 50 mph, Rail Cant, Track  
Geometry, 3D Right-of-Way Scanner,  
Self propelled capability**



**Track Inspection Car (ATIP)  
DOTX219 (T-19)**

**Track Geometry, Ride  
Quality, Rail Cant,  
Self propelled capability**



**Track Inspection Car (ATIP)  
DOTX220 (T-20)**

**Track Geometry, Ride  
Quality, Rail Cant, Towed**



**Autonomous Track  
Inspection Car (ATIP)  
DOTX221 (T-21)**

**Ride Quality, Track  
Geometry, Towed**



**ATIP Support Vehicle  
DOTX223 (T-23)**

**Storage, Axle count car**



**University Support  
R4**

**Research Car**

- Capable of testing at 125 MPH
- Samples at 12 inch intervals
- Track Geometry Measurement System captures track gauge, alignment, track surface (crosslevel, warp, profile), and maximum train speeds in curves
- Transverse Rail Profile System captures profile, rail wear and rail cant in real time
- Ride Quality Measurement System (RQMS)
- Differential Global Positioning System to help locate track features
- Compliance survey operations now provide supplemental exception data for next higher track class simultaneously, promoting preventive maintenance alongside remedial action
- Real-time email exception distribution system permits operation without regional track inspector onboard

- Modes of Operation
  - Compliance Survey Mode
    - This is the normal survey mode.
  - Amtrak Assessment Mode
    - This is a special test mode when the ATIP fleet covers a large portion of the main Amtrak routes around the country.
  - iTrack (Optional)
    - This is a new operation using technologies that allow the regions to not staff the cars and still maintain their connection to the railroad.
  - Remote Track Geometry System (RTGMS)
    - This is a hybrid of the Autonomous and Man system. The data is streamed off the car and the Data Analysis is in an office editing the data as if they were in the field.

# Federal Railroad Administration

# RTGMS and Web Interface

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Exceptions and Events

Type	Railroad	Subdivision	MP	MP Foot	Value	Length	Latitude	Longitude	Speed	PC	AC	Trac
Twist 31	UNKNOWN	UNKNOWN	-1	0	2.463	15	0	0	47	4	0	1
Crosslevel	NS	LURGAN BRANCH	42	2097	2.374	69	40.037282	-77.521349	47	4	1	5
Warp 62	NS	LURGAN BRANCH	42	1719	2.644	62	40.036383	-77.522012	46	4	1	5
Warp 62	NS	LURGAN BRANCH	42	1216	2.461	52	40.035199	-77.522946	45	4	1	5
Warp 62	NS	LURGAN BRANCH	58	1158	2.423	34	39.864679	-77.691497	46	4	1	5
Warp 62	NS	LURGAN BRANCH	57	3964	2.634	57	39.858336	-77.694627	47	4	1	5
Warp 62	NS	LURGAN	59	2564	2.12	61	39.854596	-77.696493	47	4	2	5

Total no. of records 132

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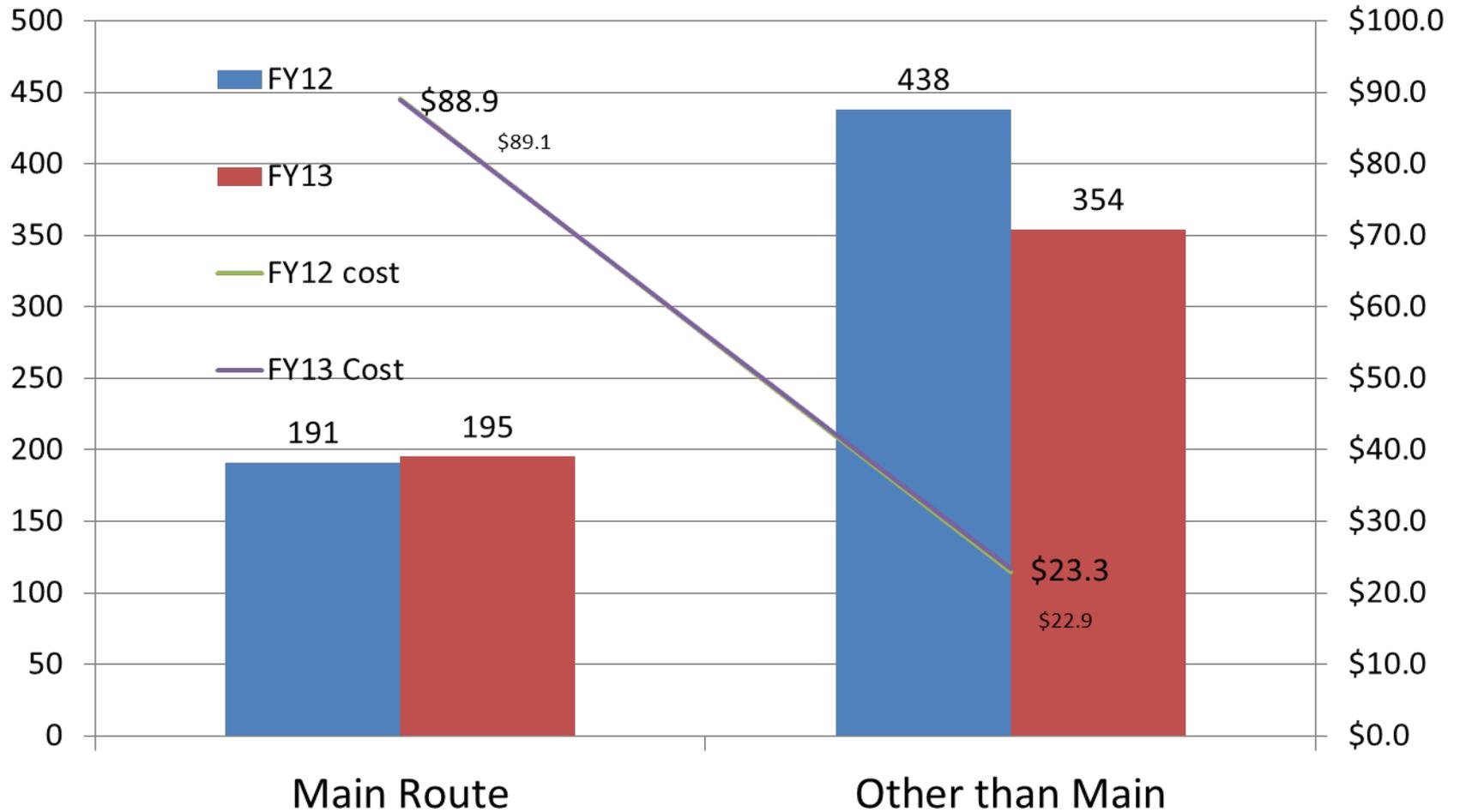
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Show ATG

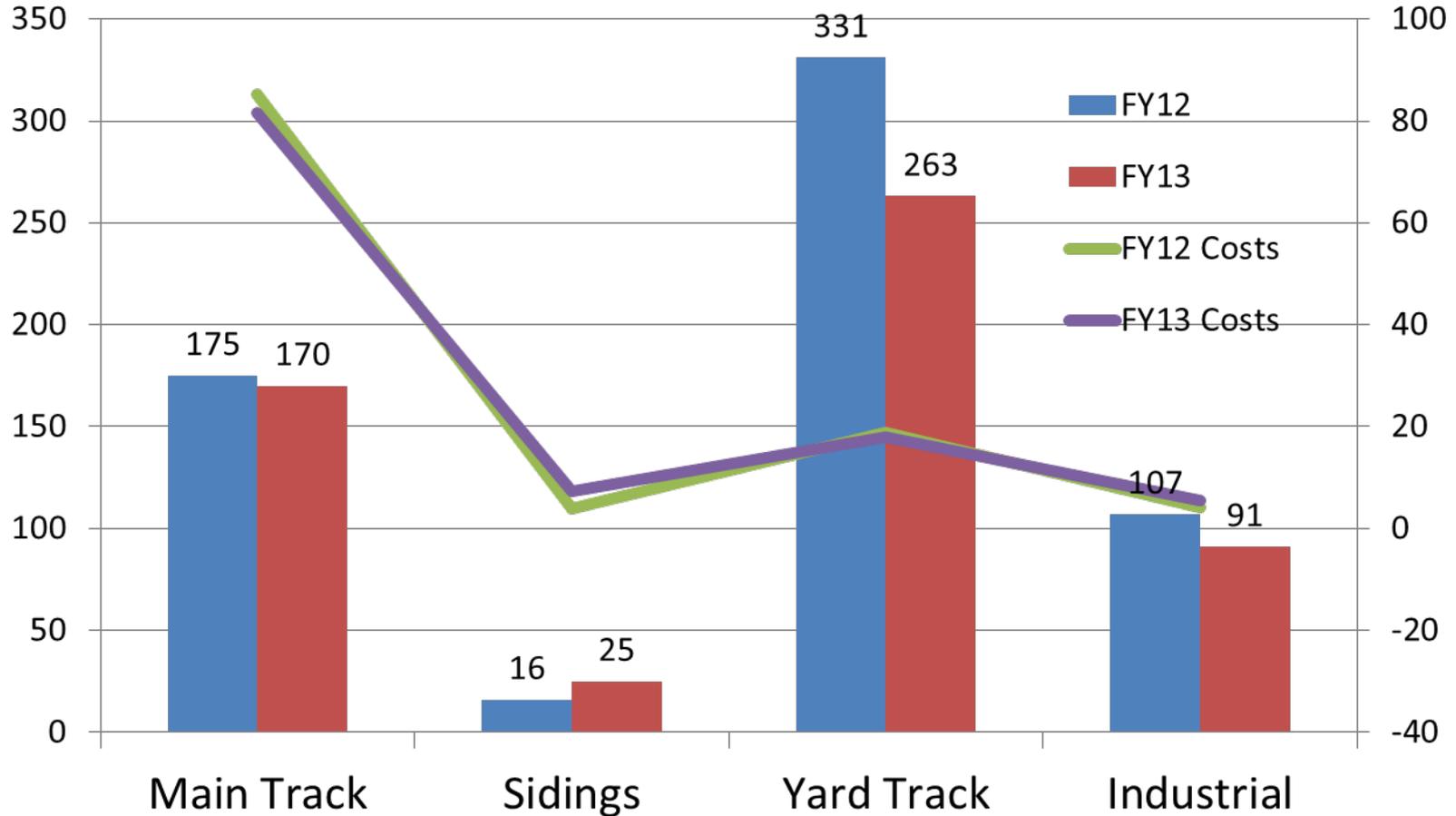


- RTGMS was installed on DOTX221 in August 2011 under a joint effort with ORD
- System requires no operators onboard
- DOTX221 has tested approximately 40,000 miles during the Amtrak Assessment with DOTX220 and unmanned shakedown runs
- Remote Operator Desk is being currently developed by ORD
- The desk will be connected to TDMS and will allow ATIP operator to review and edit exceptions via a web interface
- Operational limitations
  - No temporary slow orders
  - No general orders
  - No rail profile (CANT)
  - Currently restricted to Amtrak routes

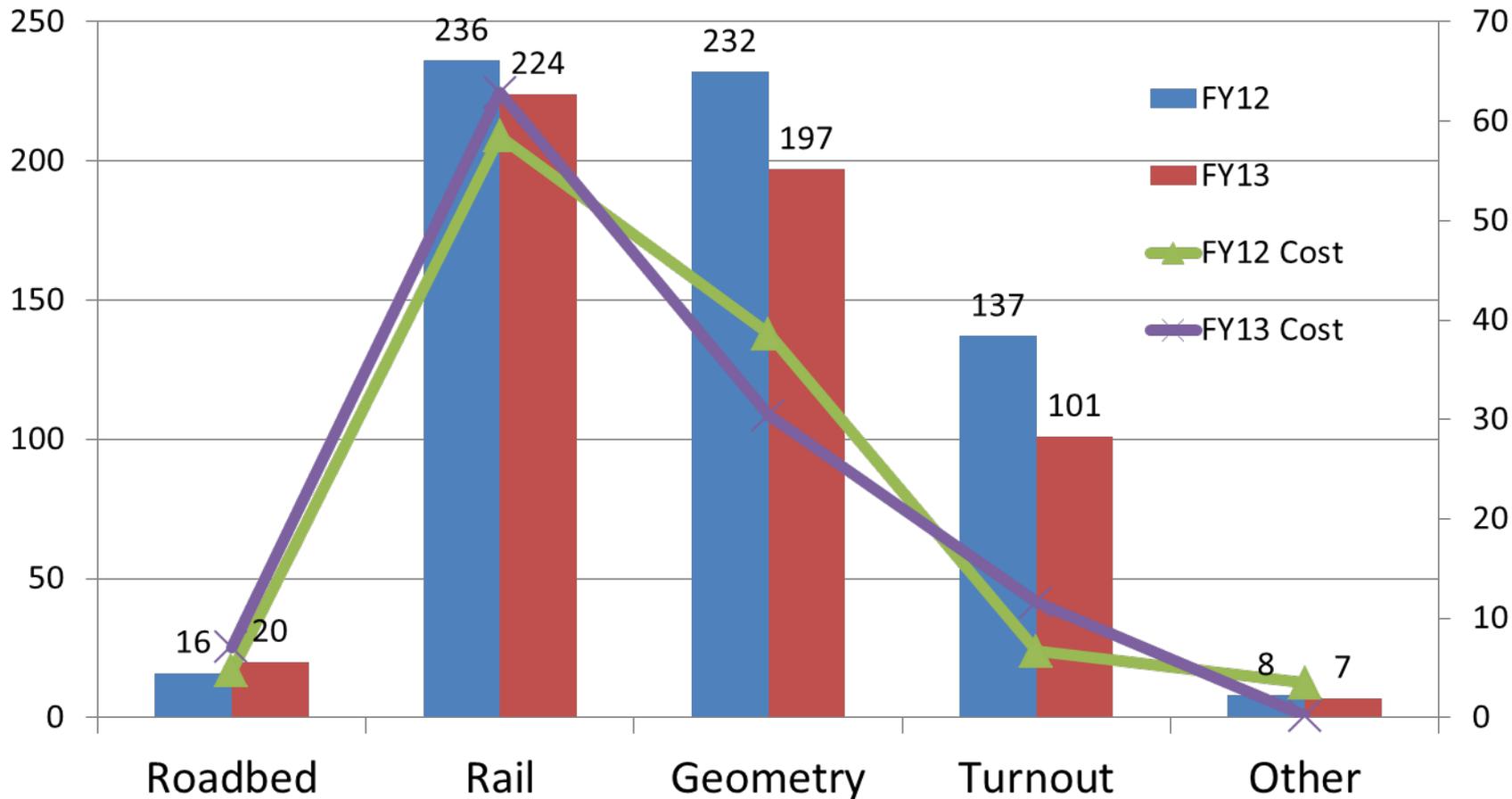
# Total Track Caused Derailments Main Route vs Other than Main



# Track Caused Derailments Location and Cost (\$m)

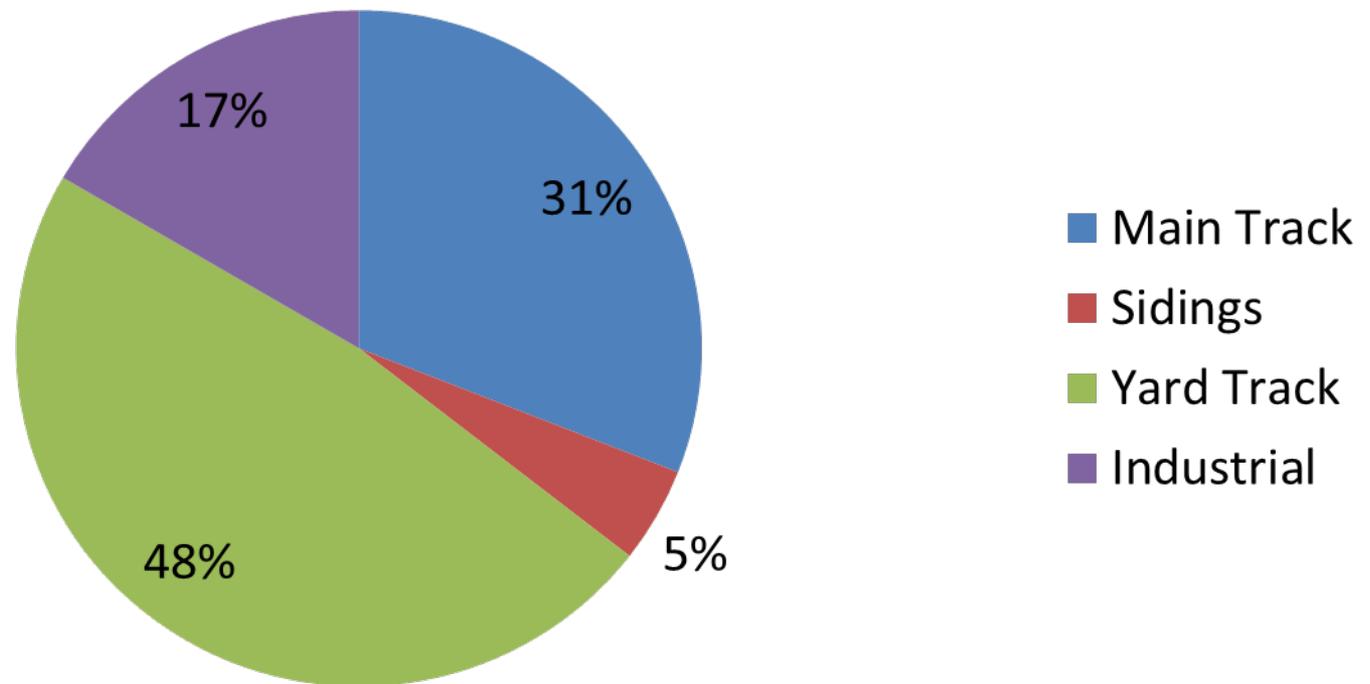


# Track Caused Derailments Major Cause Groups and Cost (\$m)

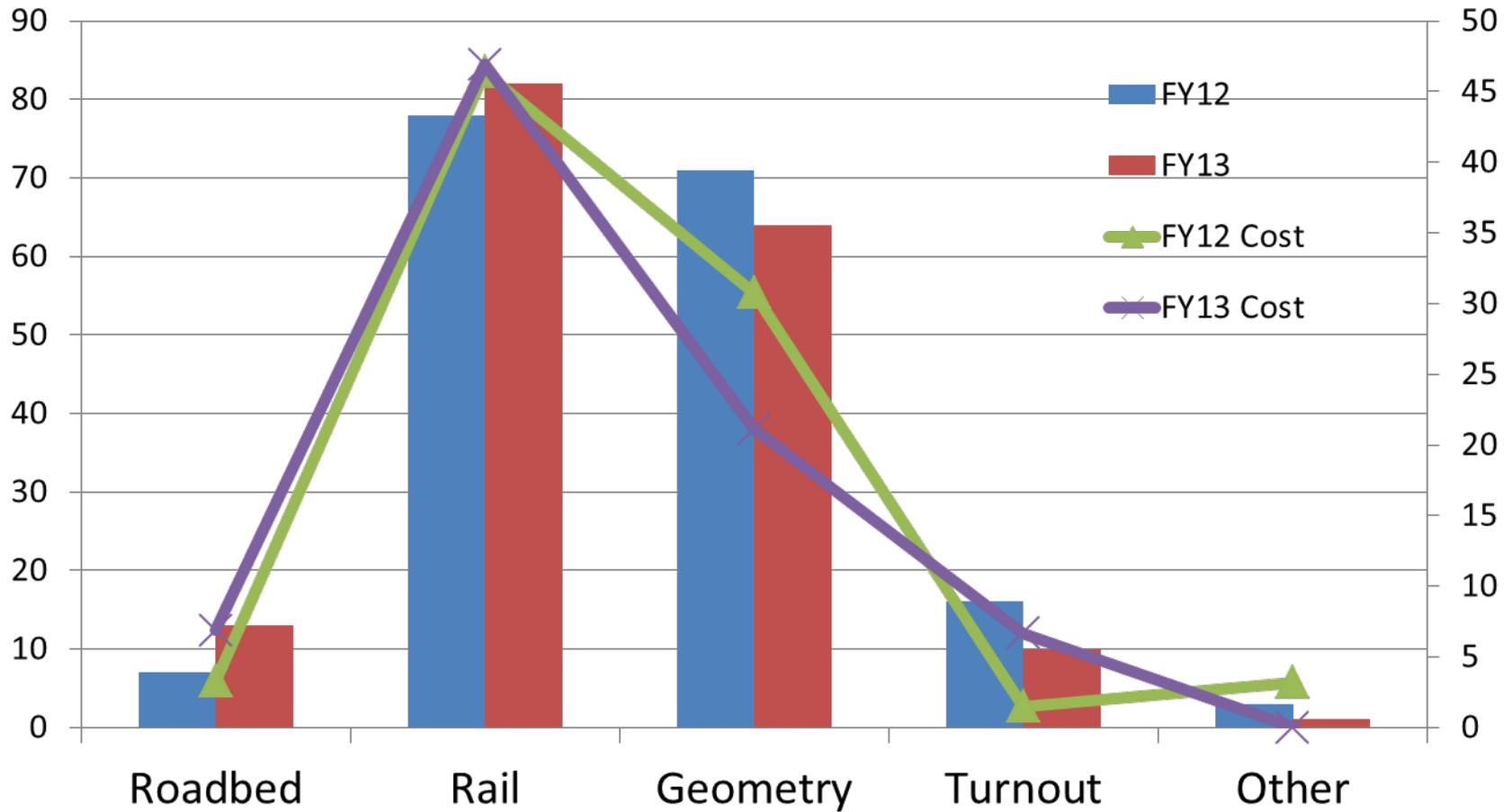


# Track Caused Derailments FY13 Location Percentage

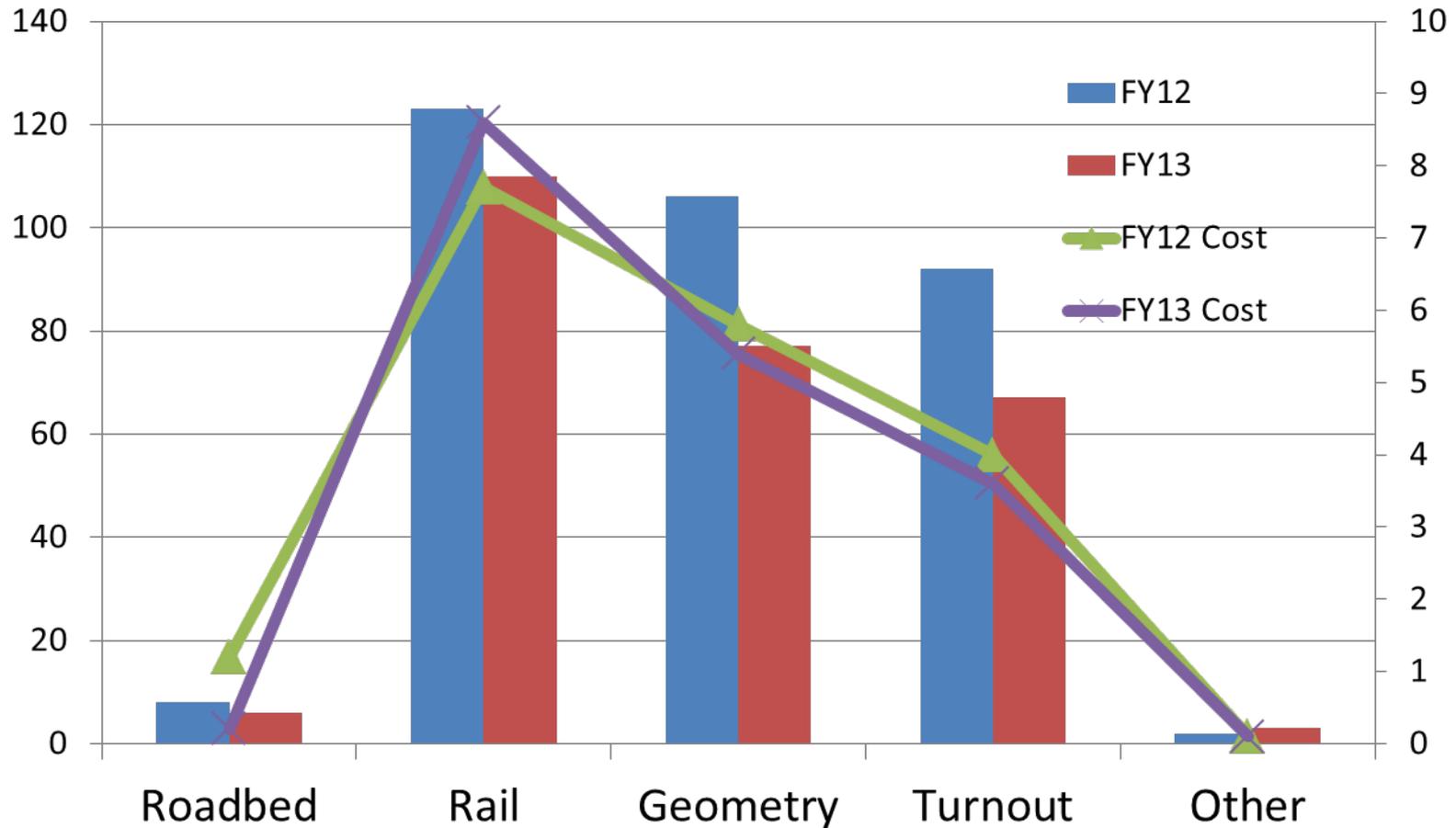
**FY13 %**



# Track Caused Derailment Main Track Cause Groups and Cost



# Track Caused Derailments Yard Track Cause Groups and Cost





Questions?